



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/014,681	12/11/2001	Michael Anthony Klug	ZEB0020D2US	4374
33031	7590	02/17/2009	EXAMINER	
CAMPBELL STEPHENSON LLP 11401 CENTURY OAKS TERRACE BLDG. H, SUITE 250 AUSTIN, TX 78758			LAVARIAS, ARNEL C	
		ART UNIT	PAPER NUMBER	
		2872		
		MAIL DATE		DELIVERY MODE
		02/17/2009		PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/014,681	KLUG ET AL.	
	Examiner	Art Unit	
	Arnel C. Lavaras	2872	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1) Responsive to communication(s) filed on 19 November 2008.
 2a) This action is **FINAL**. 2b) This action is non-final.
 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4) Claim(s) 36-41,57 and 65 is/are pending in the application.
 4a) Of the above claim(s) 36-38 is/are withdrawn from consideration.
 5) Claim(s) _____ is/are allowed.
 6) Claim(s) 39-41,57 and 65 is/are rejected.
 7) Claim(s) _____ is/are objected to.
 8) Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9) The specification is objected to by the Examiner.
 10) The drawing(s) filed on 11 December 2001 is/are: a) accepted or b) objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 a) All b) Some * c) None of:
 1. Certified copies of the priority documents have been received.
 2. Certified copies of the priority documents have been received in Application No. _____.
 3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)	4) <input type="checkbox"/> Interview Summary (PTO-413)
2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)	Paper No(s)/Mail Date. _____ .
3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)	5) <input type="checkbox"/> Notice of Informal Patent Application
Paper No(s)/Mail Date _____.	6) <input type="checkbox"/> Other: _____ .

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114 was filed in this application after a decision by the Board of Patent Appeals and Interferences, but before the filing of a Notice of Appeal to the Court of Appeals for the Federal Circuit or the commencement of a civil action. Since this application is eligible for continued examination under 37 CFR 1.114 and the fee set forth in 37 CFR 1.17(e) has been timely paid, the appeal has been withdrawn pursuant to 37 CFR 1.114 and prosecution in this application has been reopened pursuant to 37 CFR 1.114. Applicant's submission filed on 11/19/08 has been entered.

Response to Amendment

2. The amendments to Claims 36-41, 57 in the submission filed 11/19/08 are acknowledged and accepted.
3. The addition of Claim 65 in the submission filed 11/19/08 is acknowledged and accepted.
4. The cancellation of Claim 64 in the submission filed 11/19/08 is acknowledged and accepted.

Election/Restrictions

5. Newly submitted/amended Claims 36-38 are directed to an invention that is independent or distinct from the invention originally claimed for the following reasons:

Restriction to one of the following inventions is required under 35 U.S.C. 121:

- I. Claims 36-38, drawn to an apparatus for printing holographic stereograms, including specific details of a second replaceable band-limited diffuser and a second replaceable masking plate, both of which form a second matched set, classified in Class 359, subclass 28.
- II. Claims 39-41, 57, 65, drawn to an apparatus and method for printing holographic stereograms, including specific details of a voxel-control lens located in the path of the object beam, classified in Class 359, subclass 30.

The inventions are distinct, each from the other because of the following reasons:

Inventions I and II are directed to related products/processes. The related inventions are distinct if: (1) the inventions as claimed are either not capable of use together or can have a materially different design, mode of operation, function, or effect; (2) the inventions do not overlap in scope, i.e., are mutually exclusive; and (3) the inventions as claimed are not obvious variants. See MPEP § 806.05(j). In the instant case, the inventions as claimed have a materially different function and/or effect. Furthermore, the inventions as claimed do not encompass overlapping subject matter since each invention includes mutually exclusive subject matter not found in the other inventions as set forth above in the listing of inventions, and there is nothing of record to show them to be obvious variants.

Restriction for examination purposes as indicated is proper because all these inventions listed in this action are independent or distinct for the reasons given above and there would be a serious search and examination burden if restriction were not required because one or more of the following reasons apply:

- (a) the inventions have acquired a separate status in the art in view of their different classification;
- (b) the inventions have acquired a separate status in the art due to their recognized divergent subject matter;
- (c) the inventions require a different field of search (for example, searching different classes/subclasses or electronic resources, or employing different search queries);
- (d) the prior art applicable to one invention would not likely be applicable to another invention;
- (e) the inventions are likely to raise different non-prior art issues under 35 U.S.C. 101 and/or 35 U.S.C. 112, first paragraph.

Applicant is reminded that upon the cancellation of claims to a non-elected invention, the inventorship must be amended in compliance with 37 CFR 1.48(b) if one or more of the currently named inventors is no longer an inventor of at least one claim remaining in the application. Any amendment of inventorship must be accompanied by a request under 37 CFR 1.48(b) and by the fee required under 37 CFR 1.17(i).

Since applicant has received an action on the merits for the originally presented invention (i.e. Invention II, Claims 39-41, 57, 65), this invention has been constructively elected by original presentation for prosecution on the merits. Accordingly, Claims 36-

38 are withdrawn from consideration as being directed to a non-elected invention. See 37 CFR 1.142(b) and MPEP § 821.03.

Response to Arguments

6. The Applicants' arguments with respect to Claims 36-41, 57, 64 have been considered but are moot in view of the new ground(s) of rejection.
7. Claims 39-41, 57, 65 are now rejected as follows.

Priority

8. Acknowledgment is made of applicant's claim for priority under 35 U.S.C. 119(e) and 120.

Drawings

9. The originally filed drawings were received on 12/11/01. These drawings are acceptable.

Specification

10. Applicant is reminded of the proper language and format for an abstract of the disclosure.

The abstract should be in narrative form and generally limited to a single paragraph on a separate sheet *within the range of 50 to 150 words*. It is important that the abstract not exceed 150 words in length since the space provided for the abstract on the computer tape used by the printer is limited. The form and legal phraseology often used in patent claims, such as "means" and "said," should be avoided. The abstract should describe the disclosure sufficiently to assist readers in deciding whether there is a need for consulting the full patent text for details.

The language should be clear and concise and should not repeat information given in the title. *It should avoid using phrases which can be implied, such as, "The disclosure concerns," "The disclosure defined by this invention," "The disclosure describes," etc.*

11. The abstract of the disclosure is objected to because of the following informalities:

Abstract is too long.

Abstract, line 6- 'The present invention concerns methods' should read 'Methods'

Abstract, line 9- 'The present invention is an' should read 'An'

Abstract, lines 19-20- 'the present invention may also utilize a voxel-control lens' should read 'a voxel-control lens may be'

Abstract, line 22- delete 'the present invention may also utilize'

Abstract, line 23- insert 'may be utilized' after 'masking plates'

Abstract, lines 23-24- delete 'the present invention incorporates'

Correction is required. See MPEP § 608.01(b).

12. The lengthy specification has not been checked to the extent necessary to determine the presence of all possible minor errors. Applicant's cooperation is requested in correcting any errors of which applicant may become aware in the specification.

Double Patenting

13. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d

2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

14. Claims 39, 57 are rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over Claims 1-45 of U.S. Patent No. 6330088 in view of Zabka (U.S. Patent No. 5223955), of record.

U.S. Patent No. 6330088 similarly discloses and claims an apparatus (See for example Claim 1) for printing holographic stereograms comprising a light source (See Claim 1, line 3) configured to produce a coherent beam; a beam splitter (See Claim 1, lines 4-5) configured to split the coherent beam into an object beam and a reference beam; a material holder (See Claim 1, lines 6-7) holding a holographic recording material having elemental holograms; an object beam unit (See Claim 1, lines 8-11) configured to display a rendered image and to condition the object beam with the rendered image to interfere with the reference beam at a chosen elemental hologram; a voxel-control lens (See Claims 1, 8) located in the path of the object beam and positioned at a distance from the elemental hologram; and a computer (See Claim 1, lines 21-24) programmed to control the interference of the object beam and the reference beam and the delivery of the rendered image to the object beam unit. U.S. Patent No. 6330088 also similarly discloses and claims a method (See for example Claim 37) of printing a holographic stereogram

with elemental holograms, comprising the steps of selecting (See Claim 37, line 3) an elemental hologram; generating (See Claim 37, line 4) a coherent light beam; splitting (See Claim 37, line 5-6) the beam into an object beam and a reference beam; rendering (See Claim 37, line 7) an image; conditioning (See Claim 37, line 8) the object beam with the rendered image, the conditioning of the object beam comprising positioning (See Claims 37, 42) a voxel-control lens at a distance from the elemental hologram, and passing the object beam through the voxel-control lens; and interfering (See Claims 37, lines 18-19) the conditioned object beam with the reference beam at the selected elemental hologram. U.S. Patent No. 6330088 does not explicitly disclose the position of the voxel-control lens being based on a focal length of the voxel-control lens and a size of the elemental hologram. Zabka discloses a system for recording a sequence of elemental holograms in holographic material 53, wherein an additional lens 47 is placed between the condensing lens 43 and the holographic material 53 (Figs. 1, 7a, 8a, lines 4-12, col. 6). The purpose of the second lens 47 is to change the apparent depth of the field view as well as the size of the hologram (as affecting the focus of the system), see lines 9-12, col. 6, and 60-61, col. 7. The placement or position of the lens in the optical system necessarily depends on the focal length of the lens (since a lens inherently has a focal length) and the size of the hologram that is required. Thus, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have the position of the voxel-control lens be based on a focal length of the voxel-control lens and a size of the elemental hologram, as taught by Zabka, in the system and method of U.S. Patent No.

6330088, for achieving easy focus control, flexibility and enhancement of image fidelity (see lines 4-12, col. 6 in Zabka).

Claim Rejections - 35 USC § 102

15. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

16. Claims 39, 57 are rejected under 35 U.S.C. 102(b) as being anticipated by Oosaka et al. (U.S. Patent No. 3922060).

Oosaka et al. discloses an apparatus and method for printing holographic stereograms (See for example Figures 1, 4-5), the apparatus and method both comprising a light source (See for example 1 in Figure 1) configured to produce a coherent beam; a beam splitter (See for example 3 in Figure 1) configured to split the coherent beam into an object beam (See for example ‘b’ in Figure 1) and a reference beam (See for example ‘a’ in Figure 1); a material holder (See for example 9, 10, 24, 25 in Figure 1) holding a holographic recording material having elemental holograms (See for example 9, 26 in Figure 1); an object beam unit (See for example 12, 13, 14, 18 in Figure 1; Figure 4) configured to display a rendered image (See for example 50, 51 in Figure 4) and to condition the object beam with the rendered image to interfere with the reference beam at a chosen elemental hologram; a voxel-control lens (See for example 17 in Figure 1; 45 in Figure 4) located in the path of the object beam and positioned at a distance from the

elemental hologram, wherein the position is based on a focal length of the voxel-control lens and a size of the elemental hologram (It is noted that the lens 45 inherently has a focal length, and that its position in the optical system is necessarily dictated by the focal length and the size of the elemental hologram that is required at the holographic recording medium); and a computer (See for example 53 in Figure 5) programmed to control the interference of the object beam and the reference beam and the delivery of the rendered image to the object beam unit.

Claim Rejections - 35 USC § 103

17. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

18. Claims 39-41, 57, 65 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kihara et al. (U.S. Patent No. 5949559), of record, in view of Zabka (U.S. Patent No. 5223955), of record.

Regarding Claims 39, 57, 65, Kihara et al. discloses a system and a method for recording holographic stereograms, both the system and method comprising (Figs. 3A, 3B): a light source 31 configured to produce a coherent beam L1, a beam splitter 33 configured to split the coherent beam into an object beam LA and a reference beam L3; a material holder 50 holding a holographic recording material 30 having elemental holograms; an object beam unit (Fig. 3B) configured to display a rendered image and to

condition the object beam with the rendered image to interfere with the reference beam at a chosen elemental hologram; and a computer programmed to control the interference of the object beam L4 and the reference beam L3 and the delivery of the image to the object beam unit (line 15, col. 3 to line 33, col. 6). However, Kihara et al.'s system lacks a lens located in the path of the object beam and positioned at a distance from the elemental hologram, wherein the position is based on a focal length of the lens and a size of the elemental hologram, the lens being used to control the size of the elemental hologram being recorded and make the rendered image appear to be further away from the holographic recording material. However, Zabka discloses a system for recording a sequence of elemental holograms in holographic material 53, wherein an additional lens 47 is placed between the condensing lens 43 and the holographic material 53 (Figs. 1, 7a, 8a, lines 4-12, col. 6). The purpose of the second lens 47 is to change the apparent depth of the field view as well as the size of the hologram (as affecting the focus of the system), see lines 9-12, col. 6, and 60-61, col. 7. The placement or position of the lens in the optical system necessarily depends on the focal length of the lens (since a lens inherently has a focal length) and the size of the hologram that is required. It would have been obvious to one of ordinary skill in the art at the time the invention was made to include a lens located in the path of the object beam and positioned at a distance from the elemental hologram, wherein the position is based on a focal length of the lens and a size of the elemental hologram, the lens being used to control the size of the elemental hologram being recorded and make the rendered image appear to be further away from the holographic recording material, as taught by Zabka, in the system and method of Kihara

et al., for achieving easy focus control, flexibility and enhancement of image fidelity (see lines 4-12, col. 6 in Zabka).

Regarding Claims 40-41, the optical system of Kihara et al. also includes an SLM 41 for displaying an image. However, Kihara et al. in view of Zabka does not specify the focal length of the second, voxel-control lens located between the condensing lens 43 and the holographic material 30. It would have been obvious to one of ordinary skill in the art to use such a lens with focal length approximately equal to its distance from the SLM or the image of the SLM, since it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art. *In re Boesch*, 617 F.2d 272, 205 USPQ 215 (CCPA 1980). Here, the result effective variable is the focal length of the lens. The above arrangement is common in Fourier holography.

19. Claims 40-41 are rejected under 35 U.S.C. 103(a) as being unpatentable over Oosaka et al. in view of Kihara et al.

With respect to Claims 40-41, Oosaka et al. discloses the invention as set forth above in Claims 39 and 57, except for an SLM for displaying an image, and does not specify the focal length of the voxel-control lens. However, Kihara et al. teaches a holographic recording system (See for example Figures 2-3), wherein the optical information to be recorded in the holographic recording medium is incorporated into the object beam using a liquid crystal display (See for example 41 in Figures 2-3). Thus, it would have been obvious to one having ordinary skill in the art at the time the invention was made to substitute the object in the system of Oosaka et al., for a spatial light modulator, such as a liquid crystal display, as taught by Kihara et al., to allow a variety of images to be

incorporated into the object beam so as to be recorded onto the holographic recording medium, while allowing the display to also be controlled by the computer. Further, though Oosaka et al. does not specify the focal length of the voxel-control lens, it would have been obvious to one of ordinary skill in the art to use such a lens with focal length approximately equal to its distance from the SLM or the image of the SLM, since it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art. *In re Boesch*, 617 F.2d 272, 205 USPQ 215 (CCPA 1980). Here, the result effective variable is the focal length of the lens. The above arrangement is common in Fourier holography.

20. Claim 65 is rejected under 35 U.S.C. 103(a) as being unpatentable over Oosaka et al. in view of Zabka.

Oosaka et al. discloses the invention as set forth above in Claims 39 and 57, except for the voxel control lens being positioned at a location selected to change the size of at least one voxel, and to make the rendered image as seen from the viewpoint of the elemental hologram appear at a greater apparent distance relative to the holographic recording material. However, Zabka discloses a system for recording a sequence of elemental holograms in holographic material 53, wherein an additional lens 47 is placed between the condensing lens 43 and the holographic material 53 (Figs. 1, 7a, 8a, lines 4-12, col. 6). The purpose of the second lens 47 is to change the apparent depth of the field view as well as the size of the hologram (as affecting the focus of the system), see lines 9-12, col. 6, and 60-61, col. 7. The placement or position of the lens in the optical system necessarily depends on the focal length of the lens (since a lens inherently has a focal

length) and the size of the hologram that is required. It would have been obvious to one of ordinary skill in the art at the time the invention was made to include a lens located in the path of the object beam and positioned at a distance from the elemental hologram, wherein the position is based on a focal length of the lens and a size of the elemental hologram, the lens being used to control the size of the elemental hologram being recorded and make the rendered image appear to be further away from the holographic recording material, as taught by Zabka, in the system and method of Kihara et al., for achieving easy focus control, flexibility and enhancement of image fidelity (see lines 4-12, col. 6 in Zabka).

Conclusion

21. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Arnel C. Lavarias whose telephone number is 571-272-2315. The examiner can normally be reached on M-F 10:00 AM - 6:30 PM EST. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stephone B. Allen can be reached on 571-272-2434. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Arnel C. Lavarias
Primary Examiner
Group Art Unit 2872
2/12/09

/Arnel C. Lavarias/
Primary Examiner, Art Unit 2872